

## CLAIMS

1. A pipe connector for repairing a burst pipe, comprising a sleeve for encircling adjacent facing ends of old and new pipe sections, the sleeve having a first collar portion for surrounding and establishing an external seal with the end of the new pipe section and a second collar portion for surrounding and establishing an external seal with the end of the old pipe section:

5       wherein the first collar portion has an annular internal recess receiving a circular array of arcuate gripper members to surround the new pipe section, an actuating member contacting the circular array of arcuate gripper members internally of the recess and defining, within the recess, a pressure chamber to which fluid under pressure can be applied to move the actuating member to urge the arcuate gripper members against the external diameter of the new pipe section, and sealing means responsive to fluid under pressure in the pressure chamber for sealing against the external diameter of the new pipe section;

10      and wherein the second collar portion has an annular internal recess receiving a nitrile rubber annular sealing member which defines, within the recess, a pressure chamber to which fluid under pressure can be applied to urge the nitrile rubber sealing member to move radially inwardly into sealing engagement with the external diameter of the old pipe section.

15      2. A coupling according to claim 1, wherein the sealing means responsive to fluid under pressure in the pressure chamber is an O-ring located in an annular recess located in an internally facing groove spanning the circular array of gripper members and compressed, in use, between the gripper members and the outside diameter of the new pipe section and optionally also against a side wall of the recess.

20      30     3. A coupling according to claim 1, wherein the gripper members extend laterally down the side wall or walls of the groove in the first collar portion and

- 10 -

across a part of the width of the groove as it opens towards the new pipe section; the actuating member contacting the circular array of gripper members comprises a nitrile rubber sealing ring; and the sealing means for sealing against the external diameter of the new pipe section is a portion of  
5 that sealing ring which on pressurisation extrudes radially inwardly past the gripper members and against the pipe external diameter.

4. A coupling according to any preceding claim, wherein the aspect ratio (radial depth to width) of the nitrile rubber sealing member is of the order of  
10 2:1.

5. A pipe repair method utilising two pipe connectors according to any preceding claim for repairing a burst pipe which comprises the following process steps:

15 first a burst portion of an existing pipeline is identified and located;  
then the burst section of the pipe is cut away, leaving two preferably square planar cut ends of the old pipe facing each other and separated by the length of the removed portion of the burst pipe;

20 then that cut-away pipe portion is replaced by an identical length of a new pipe section having a similar internal diameter, onto which there have been pre-located two pipe connectors according to the invention, with their respective first collar portions adjacent to one another and their respective second collar portions facing mutually outwardly towards the opposite ends of the new pipe section;

25 with the new pipe section being held temporarily in line with the old pipe and filling the gap caused by cutting out and removing the burst section of pipe, the two pipe connectors are then moved mutually apart until each straddles the junction between old and new pipe sections; and finally

30 high pressure grease is applied first to the pressure chambers of the first collar portions so as to move the arcuate gripper members into gripping engagement with the first pipe section, and to establish a seal against the external diameter of the new pipe section by compression of the sealing

- 11 -

means against that outer diameter, and then to the pressure chambers formed in the second collar portions of the pipe connectors, so that the nitrile sealing members contained in the annular recesses of the second collar portions are forced to extrude radially inwardly from the recesses of the  
5 second collar portions and into firm sealing contact with the external diameter of the old pipe section.